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- (71) Applicant
Joaquín Pérez Adsuar,
Serrano 220, Madrid,
Spain
- (72) Inventor
Joaquín Pérez Adsuar
- (74) Agents
Edward Evans & Co.

(54) Containers for shock-proof packaging

(57) A container e.g. for a pharmaceutical product comprises a hollow capsule (1) having an aperture, a closure member (3) releasably engaged with the capsule to hermetically seal the capsule, one or more cushioning elements (8) disposed within the capsule and pills disposed within the capsule and held

protected against mechanical shocks to which the exterior of the container may be subjected by means of the one or more cushioning elements (8). Preferably an inner hollow transparent member 7 is located within the capsule and accommodates the pills and the one or more cushioning elements (8) and is hermetically sealed by the closure member. Preferably the container has means for attachment to the dress of a potential user.

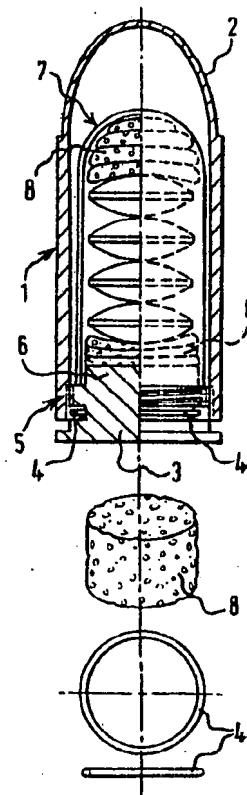


FIG. 1.

The drawings originally filed were informal and the print here reproduced is taken from a later filed formal copy.

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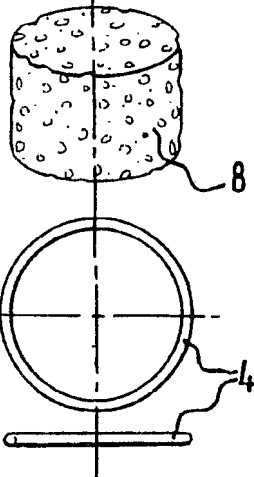
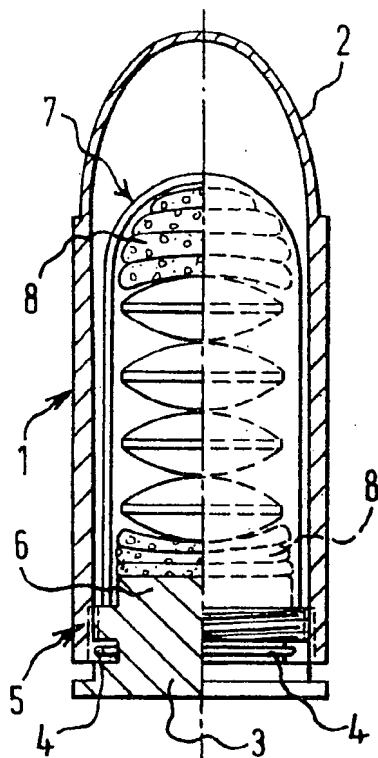


FIG. 1.

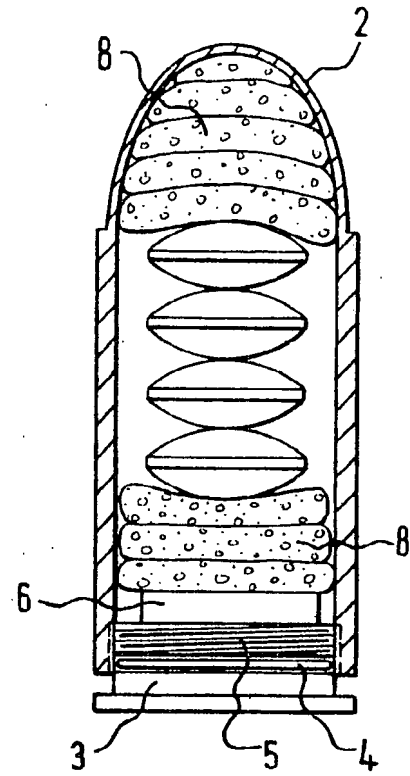


FIG. 2.

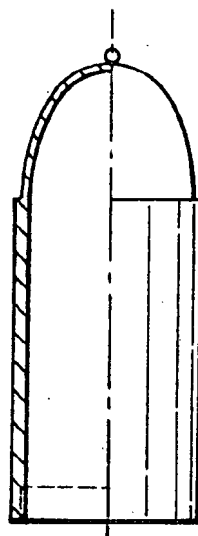


FIG. 3.



FIG. 4.

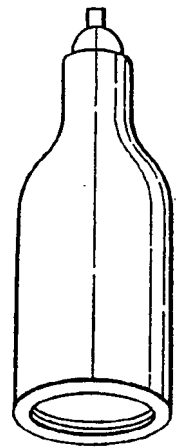


FIG. 5.

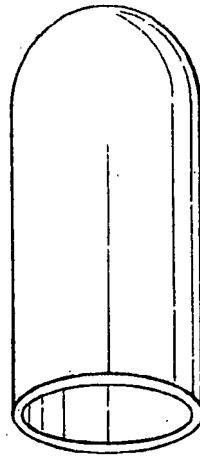


FIG. 6.

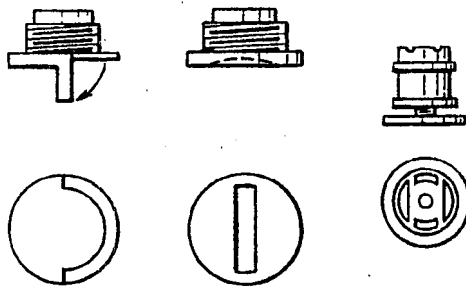


FIG. 7.

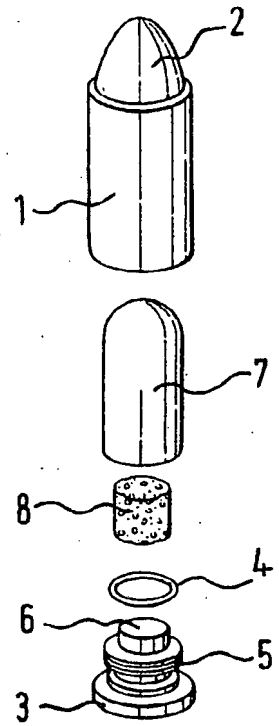


FIG. 8.

SPECIFICATION

Containers for indefinite packaging and preservation of pharmaceutical products and other medicaments

5 The present invention relates to a container for indefinite packaging and preservation of a pharmaceutical product or other medicament.

There are on the market a large number of pharmaceutical products for alleviating and curing the effects of sudden attacks of various diseases which are in general fatal.

Normally such attacks are sudden in time and form and surprise the person affected by the attack, who even though carrying suitable medicament, may die, due to the loss of effectiveness of the medicament due to its age or due to it having been wetted, struck, rubbed or otherwise spoilt.

The container according to the invention is for carrying medicament in the form of pellets, capsules, tablets, pills or other discrete solid bodies and serves three purposes, namely to prolong the period of effectiveness of the medicament, to avoid deterioration of the medicament by contact with liquids and to prevent the bodies of medicament striking or rubbing against each other.

Typical maladies which the medicaments may be intended to treat are inter alia *angina pectoris* and *myocardium infarctus* which at present cause five million deaths annually in the world.

Such medicaments are usually formulated as pellets, which are provided with a thin exterior shell or "skin" for prolonging the life (period of effectiveness) of the medicament within the pellet. If the "skin" or shell is not damaged, the core (i.e. the medicament) of the pellet may have an indefinite life, which may almost be considered unlimited. However, the "skin" is very brittle and usually dissolves then in contact with liquid.

Therefore it is thought to be dissolved only under the tongue to let the medicament act. Consequently the container according to the invention is intended to provide total protection for the medicament against atmospheric agents, until the medicament is to be used, due to its being totally hermetically sealed.

In accordance with the present invention there is provided a container for indefinite packaging and preservation of a pharmaceutical product or other medicament, comprising a hollow capsule having an aperture, a closure member releasably engaged with the capsule to close the aperture and hermetically seal the capsule, one or more cushioning elements disposed within the capsule, and medicament disposed within the capsule and held protected against mechanical shock to which the exterior of the container may be subjected by means of the one or more cushioning elements.

The number of people affected by maladies such as mentioned above is increasing and in most cases such maladies do not give warning of an attack. It is highly desirable to accustom people to the idea of carrying medicaments for such

maladies, these medicaments being useful at an indeterminate moment for themselves, as well as for other people and possibly affording the incomparable satisfaction of saving another person's life.

The container according to the invention should be easily identifiable so that any person seeing it can instantly recognise it as being in effect a small emergency medicine case, and will treat the bearer with the medicament if the bearer is not in a sufficiently lucid condition to extract the medicament from the container and use the medicament by himself.

In order to give the container the necessary recognisability, it is envisaged that the container may have characteristic configuration, such as the shape of a bullet and/or a characteristic phrase, motto or mark may be applied to it. It is further envisaged that such characteristic or characteristics would be publicised widely, e.g. by strong impact promotion, to associate them with the idea of life saving.

The invention is further described below by way of example with reference to the accompanying drawings, wherein:

Figure 1 consists of a longitudinal sectional view of a first container according to the invention, a perspective view from above of a cushioning element of the container, a plan view of a sealing element of the container and a side view of the sealing element;

Figure 2 is a longitudinal sectional view of a second container according to the invention;

Figure 3 to 5 are respectively, a side view partly in section, a perspective view from above and a perspective view from below of hollow capsules for containers according to the invention;

Figure 6 is a perspective view from below of an inner transparent hollow member for a container according to the invention;

Figure 7 consists of side views and inverted plan views of three plugs for containers according to the invention; and

Figure 8 is an exploded view of the first container.

In the drawings, like reference indicate numerals like parts.

Referring to Figures 1 and 8, a container comprises an outer hollow capsule 1 having a lower cylindrical portion and a domed upper end portion 2, a closure member of plug 3, an inner transparent hollow member 7 and two cushioning elements 8.

The hollow capsule 1 is bullet-shaped and is formed with an external ledge or shoulder at the junction of the cylindrical portion and the domed portion 2. The cylindrical portion and the domed portion may be integral with each other, as shown, or may be separate members rigidly attached together. The lower end of the capsule 1 provides an opening or aperture which is closed by means of the plug 3. The plug 3 and the hollow capsule 1 are provided respectively with external and internal screw threads at 5 to engage the plug in the lower end of the capsule and to enable the

plug to be screwed out of the lower end of the capsule to open the capsule. The screw threads of the plug and the capsule are close fitting and a sealing member 4 is located in a groove in the plug to hermetically seal the capsule. Thus the container may be immersed in liquid without the liquid penetrating into the container.

The inner hollow transparent member 7 is located on a boss or prominence 6 of the plug 3. Within a hollow member 7 are positioned the cushioning elements 8 which are cylindrical or bellows-shaped. Between the cushioning elements are held a number of medicament pills (not referenced). The cushioning elements exert gentle pressure on the pills to hold them immobile and to keep them out of contact with the wall of the hollow member 7 (and all other parts rigid with the outer capsule 1). Thus the pills are cushioned against mechanical shocks to which the container may be subjected and are protected against abrasion and breakage.

The hollow member 7 serves to protect the pills from contact with the capsule (e.g. when the container is opened).

The hollow member 7 is soldered, stuck or adhered on the boss 6 of the plug 3 and thereby hermetically sealed. Thus the pills are protected by two hermetic seals, that between the capsule 1 and the plug 3 and that between the plug 3 and the hollow member 7.

The sealing element 4 may be made of rubber, plastics or like material. The unit hollow member 7 (or "bell-glass") may be made of glass, plastics or other material.

The cushioning elements 8 may be made of spongy, elastic or bellows material such as cotton, foam rubber or plastics. One or more further cushioning elements 8 may be positioned between the pills.

To remove the pills from the container, the plug 3 is unscrewed from the hollow capsule 1 and the hollow member 7 is removed from the plug 3 or is broken.

Referring to Figure 2, a container is similar to that shown in Figure 1 except that no inner hollow member 7 is present. The hollow capsule 1 is plasticised or painted with a substance convenient to the "skin" or shell covering the medicament and is so fit to avoid abrasion and breakage of the pills (e.g. when the container is opened).

Figures 3 to 5 shown various alternative hollow capsules 1 for containers according to the invention. All the capsules have the shape of a bullet. The capsules are provided with respective rings or various shapes e.g. oval, round, rectangular or square, for hanging the container by means of chains or the like e.g. on the body or dress of a person.

Each ring is shown attached to the upper domed portion of the capsule. It is alternatively possible for containers according to the invention to be provided with such rings on the plug 3 according to the manner in which the container is to be hung.

Referring to Figure 6, the inner hollow

member of a container according to the invention is cylindrical and may have a domed upper end, as shown, or a plain upper end.

Referring to Figure 7, there are shown three plugs 3 for containers according to the invention. The left plug has a concealed pivotal ring for use in screwing the plug into the capsule 1 of the container and unscrewing the plug from the capsule. The middle plug has a groove for use in screwing the plug into the capsule 1 of the container and unscrewing the plug from the container. I.e. Figure 7 shows the plug or shutters with which the recipient or container in question may be provided, constituting the opening system by pressure and by screw-thread, the latter with the aid of groove or fixed ring concealable ring.

Containers according to the invention are, as described above, preferably of the shape of a bullet, munition, projectile or war-like weapon. They may be made of different materials, be of different sizes, be of different shapes, contain different medicaments, and be provided with different hanging or fixing devices, different closure members and different marks (engraved or otherwise applied) for indicating the utility of the medicament for the user.

Preferred embodiment of the invention are summarised below:—

1. A capsular container for the indefinite packaging and preservation of a pharmaceutical product, being characterised by the fact that the capsular recipient or element constituting it will adopt the structure of a hollow capsule or bullet provided inside of an inner or outer screw-thread in which a shutter or cover being threaded to this purpose, will be screw fitted, shutter or cover being of same inner or outer shape, and complementing the exterior capsular element, and say shutter or cover having the structure of a perfectly hermetic closure, screw-threadable or unthreadable by any means to be provided, for its opening or closure, and having in addition a groove for the adaptation in it of a hermetic shutter joint, shutter which will have a prominence or groove to fit and duly fix, even by means of welding or soldering, or by means of a product for hermetic sealing, another inner bell-glass in which the medicament is previously disposed, medicament which will remain placed between some cylindric elements in spongy material, to get its immobility inside the container, avoiding so its rupture, being possible by this means and by means of the double hermetic shutter with which the capsular recipient will be provided, to indefinitely preserve the contained medicament.

2. A container according to summary 1, characterised by the fact that the outside capsule properly may be constituted by two elements, one of them being a lower cylindric element and the other one an upper element having the shape of an oval, rounded, pointed or blunt dome, which will constitute in whole a solidary unit internally hollow, provided with an outside or inside screw-thread.

3. A container according to summary 1 or 2,

being characterised because its closure will be obtained by means of a screw-thread cover or plug, externally structured as a bullet shell, externally, and provided on its base of a groove, 5 diametrical articulable element or by pressure by means of rotation, which will have inside and around a groove to fit in it an elastic joint, washer or ring, for its tight closure, and a groove or extension upwards to fit in it a new or a second 10 capsule being in general made in a transparent material which will finally contain the medicament capsule, being so obtained, by means of a previous welding, soldering or sealing with suitable products to this purpose, the double and 15 entirely hermetic closure of the medicament, in order to get its indefinite packing and preservation.

4. A container according to any of the preceding summaries, with the preceding 20 characterised because to be carried on or born by the possible user, said capsular recipients are to be provided on any one of their ends or surface with a ring or holding element, in which the bracelet, chain or holding element can be 25 conveniently fixed, to be united to the user body or dress, and to be at his disposal at any moment in which the attack, generally irremediable in other case, of the malady to which the device is specially devoted, angina pectoralis or 30 myocardium infarctus, and being provided of a generalised distinctive mark, if possible being known throughout the world, with which the knowledge of its existence will be general, in such way that the bearer might use it for himself 35 or for any other person being attacked, and which shape or structure will be generalised, divulgated and promoted in such a manner that it become of public knowledge, in order to get its quick and profuse utilisation.

40 CLAIMS

1. A container for indefinite packaging and preservation of a pharmaceutical product or other

medicament, comprising a hollow capsule having an aperture, a closure member releaseably 45 engaged with the capsule to close the aperture and hermetically seal the capsule, one or more cushioning elements disposed within the capsule, and medicament disposed within the capsule and held protected against mechanical shock to which 50 the exterior of the container may be subjected by means of the one or more cushioning elements.

2. A container according to claim 1, wherein the medicament is held out of contact with the wall of the capsule and any parts rigid therewith 55 by means of the one or more cushioning elements.

3. A container according to claim 1 or 2, wherein an inner hollow member is located with the capsule and accommodates the medicament and the one or more cushioning elements.

4. A container according to claim 2, wherein the hollow member is attached to the closure member. 60

5. A container according to claim 4, wherein the hollow member is hermetically sealed by means of the closure member. 65

6. A container according to any of claims 3 to 5, wherein the inner hollow member is transparent.

7. A container according to any preceding claim, wherein the closure member is screw-threadedly engaged with the capsule. 70

8. A container according to any preceding claim, provided with means for attaching the container to the body or dress of a person who 75 potentially requires the medicament.

9. A container according to any preceding claim, wherein the medicament is suitable for treatment of angina pectoralis or myocardium infarctus.

10. A container according to any preceding claim, being provided with a distinctive mark. 80

11. A container according to claim 1, substantially as described herein with reference to any as illustrated in Figures 1 and 8 or Figure 2 of the accompanying drawings. 85